

**SOUTH BLACKBIRD CREEK  
WBID 655**

**Recreational Use Attainability Analysis**

May 2007

PREPARED FOR:  
RFP No: B3Z07134  
Water Quality Monitoring & Assessment Section  
Water Protection Program  
Division of Environmental Quality  
**MISSOURI DEPARTMENT OF NATURAL RESOURCES**  
P O Box 176  
Jefferson City, MO 65102

PREPARED BY:  
**MEC WATER RESOURCES, INC.**  
1123 Wilkes Blvd., Ste. 400  
Columbia, MO 65201

## Field Data Sheets for Recreational Use Stream Surveys

### Data Sheet A - Water Body Identification

#### I. Water Body Information (For water body being surveyed)

Water Body Name (from USGS 7.5' quad):	<i>Southern Blackbird Creek</i>		
Missouri Water Body Identification (WBID) Number:	655		
8-digit HUC:	10280201	County:	Putnam
Upstream Legal Description (from Table H):	18, 65 N, 18 W		
Downstream Legal Description (from Table H):	2, 64 N, 17 W		
Number of sites evaluated	7		
List all sites numbers, listed consequently upstream to downstream: <i>Site 7      Site 5      Site 3      Site 6      Site 4      Site 2      Site 1</i>			

#### II. Subsegmentation (fill this section out only in cases where subsegmentation is being proposed)

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)			
Upstream Coordinates:		Downstream Coordinates:	
UTM X	Y	UTM X	Y
HORIZONTAL COLLECTION METHOD (Indicate the method used to determine the locational data.)			
Global Positioning System (GPS)		Interpolation	
Static Mode		Topographic Map or DRG	
Dynamic Mode (Kinematic)		Aerial Photograph or DOQQ	
Precise Positioning Service		Satellite Imagery	
Signal Averaging		Interpolation Other	
Real Time Differential Processing			
HORIZONTAL ACCURACY ESTIMATE			
GPS Data Quality		Interpolation Data Quality	
FOM	± _____ Meters	Source Map Scale: 1:24,000 1:100,000 Other _____	
EPE	± _____ Feet or ± _____ Meters		
PDOP			
		± _____ Feet or ± _____ Meters	

#### III. Discharger Facility Information (list all permitted dischargers on the stream)

Discharger Facility Name(s):	
<i>Unionville Country Club</i>	
Discharger Permit Number(s):	
<i>MO 0026646</i>	

#### IV. UAA Surveyor (please print legibly)

Name of Surveyor	Telephone Number: (573) 443-4100
Organization/Employer: <i>MSC Water Resources</i>	
Position:	

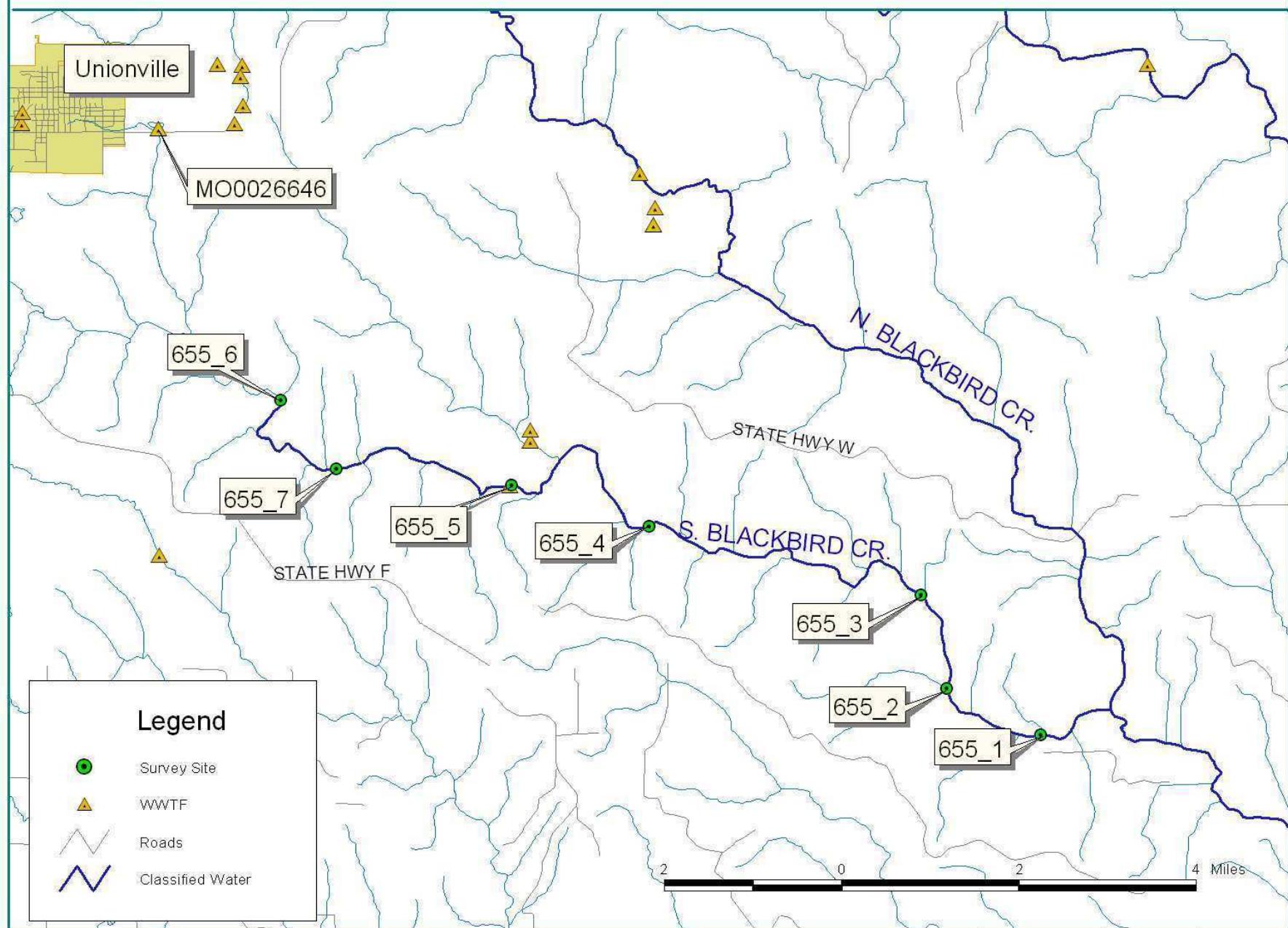
Please verify that you have completed all sections, checked all applicable boxes and that everything is complete.

Signed: *Mark Meant*

Date: *5/21/07*

*After 5/25/07*

## S. Blackbird Creek (0655), Length = 13.0 mi., Permit # MO0026646



WBID# 6055  
Site# 1**Field Data Sheets for Recreational Use Stream Surveys****Data Sheet B - Site Characterization**

(must be completed for each site)

Date & Time: <u>5/21/07 8:45</u>	Site Location Description (e.g., road crossing): <u>Oak Trail Crossing</u>
Personnel (Data Collectors): <u>Nick Muenks, Jordan R.</u>	Facility Name: <u>Unionville Country Club</u>
Current Weather Conditions: <u>Clear</u>	Permit Number: <u>MO 0026646</u>
Weather Conditions for Past 10 days:	
Drought Conditions?: No drought <input checked="" type="checkbox"/> ; Phase I <input type="checkbox"/> ; Phase II <input type="checkbox"/> ; Phase III <input type="checkbox"/> ; Phase IV <input type="checkbox"/> ; Unknown <input type="checkbox"/>	

**Site Locations:**

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)	
Site GPS Coordinates: UTM X: <u>0517457</u> Y: <u>4469286</u>	
HORIZONTAL COLLECTION METHOD (Indicate the method used to determine the locational data.)	
Global Positioning System (GPS)	Interpolation
Static Mode	<input checked="" type="checkbox"/>
Dynamic Mode (Kinematic)	<input type="checkbox"/>
Precise Positioning Service	<input type="checkbox"/>
Signal Averaging	<input type="checkbox"/>
Real Time Differential Processing	<input type="checkbox"/>
HORIZONTAL ACCURACY ESTIMATE	
GPS Data Quality	Interpolation Data Quality
FOM	$\pm$ _____ Meters
EPE	$\pm$ <u>88</u> Feet or $\pm$ _____ Meters
PDOP	$\pm$ _____ Feet or $\pm$ _____ Meters

**Photos:**

Photo ID# (WBID Site# ##)	Photo Purpose and Direction (upstream, downstream, other)	Photo ID# (WBID Site# ##)	Photo Purpose and Direction (upstream, downstream, other)
655-1-757	looking downstream at T5		
655-1-758	Upstrm at T5		
655-1-759	Upstrm at T5		

**Uses Observed\*:** (Uses actually observed at time of survey.)

<input type="checkbox"/> Swimming	<input type="checkbox"/> Skin diving	<input type="checkbox"/> SCUBA diving	<input type="checkbox"/> Tubing	<input type="checkbox"/> Water skiing
<input type="checkbox"/> Wind surfing	<input type="checkbox"/> Kayaking	<input type="checkbox"/> Boating	<input type="checkbox"/> Wading	<input type="checkbox"/> Rafting
<input type="checkbox"/> Hunting	<input type="checkbox"/> Trapping	<input type="checkbox"/> Fishing	<input checked="" type="checkbox"/> None of the above	<input type="checkbox"/> Other:
Describe: (Include number of individuals recreating, photo-documentation of evidence of recreational uses, etc. Use Data Sheet D- Recreational Use Interview when conducting interviews.)				

**Surrounding Conditions\*:** (Mark all that promote or impede recreational uses. Attach photos of evidence or unusual items of interest.)

<input type="checkbox"/> City/county parks	<input type="checkbox"/> Playgrounds	<input type="checkbox"/> MDC conservation lands	<input type="checkbox"/> Urban areas	<input type="checkbox"/> Campgrounds
<input type="checkbox"/> Boating accesses	<input type="checkbox"/> State parks	<input type="checkbox"/> National forests	<input type="checkbox"/> Nature trails	<input type="checkbox"/> Stairs/walkway
<input checked="" type="checkbox"/> No trespass sign *	<input type="checkbox"/> Fence	<input checked="" type="checkbox"/> Steep slopes	<input type="checkbox"/> None of the above	<input type="checkbox"/> Other:
Comments: *Purple paint on fence				

WBID# 655  
Site# 1**Field Data Sheets for Recreational Use Stream Surveys****Data Sheet B - Site Characterization**  
(must be completed for each site)**Indications of Human Use\*:** (attach photos)

<input type="checkbox"/> Roads	<input type="checkbox"/> Rope swings	<input type="checkbox"/> Foot paths/prints	<input type="checkbox"/> Dock/platform	<input type="checkbox"/> Livestock Watering	<input type="checkbox"/> RV / ATV Tracks
<input type="checkbox"/> Camping Sites		<input type="checkbox"/> Fire pit/ring	<input type="checkbox"/> NPDES Discharge	<input type="checkbox"/> Fishing Tackle	<input type="checkbox"/> Other:
Comments: <i>None</i>					

**Stream Morphology:****Upstream View's Physical Descriptions:** Is there any water present at this view?  Yes  NoIf so, is there an obvious current?  Yes  No**Select one of the following channel features:**

Channel Feature	Transect (#)	Distance from access (m)	Width (m) <i>% of Site</i>	Length (m)	Median Depth (m)	Max. Depth (m)
RIFFLE			<i>30</i>			
RUN			<i>20</i>			
POOL			<i>50</i>			

**Downstream View's Physical Descriptions:** Is there any water present at this view?  Yes  NoIf so, is there an obvious current?  Yes  No**Select one of the following channel features:**

Channel Feature	Distance from access (m)	Width (m)	Length (m)	Median Depth (m)	Max. Depth (m)
RIFFLE					
RUN					
POOL					

**Substrate\*:** (These values should add up to 100%).

<i>0</i> % Cobble	<i>10</i> % Gravel	<i>50</i> % Sand	<i>30</i> % Silt	<i>10</i> % Mud/Clay	<i>0</i> % Bedrock
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**Aquatic Vegetation\*:** (Note amount of vegetation or algal growth at the assessment site.)

<i>None observed</i>
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**Water Characteristics\*:** (Mark all that apply.)

ODOR:	<input type="checkbox"/> Sewage	<input type="checkbox"/> Musky	<input type="checkbox"/> Chemical	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Other:
COLOR:	<input checked="" type="checkbox"/> Clear	<input type="checkbox"/> Green	<input type="checkbox"/> Gray	<input type="checkbox"/> Milky	<input type="checkbox"/> Other:
BOTTOM DEPOSIT:	<input type="checkbox"/> Sludge	<input type="checkbox"/> Solids	<input checked="" type="checkbox"/> Fine sediments	<input type="checkbox"/> None	<input type="checkbox"/> Other:
WATER SURFACE DEPOSITION:	<input type="checkbox"/> Oil	<input type="checkbox"/> Scum	<input type="checkbox"/> Foam	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Other:

**Comments:** Please attach any additional comments to this form.

\*This information is not to be used solely for removal of a recreational use designation but rather is to provide a more comprehensive understanding of water conditions. Consequently, this information is not intended to directly influence a decision on the recreation use analysis but may point to conditions that need further analysis or that affect another use.

Please verify that you have completed all sections, checked all applicable boxes and that everything is complete.

Surveyor's Signature: Nic Muul Date of Survey: 5/21/07

Organization: MEC Water Resources Position: Water Quality Scientist

February 16, 2007

RNC 5-23-07

APAC 5/25/07

# MEC Recreational Use Attainability Analysis Field Survey Sheet

Waterbody ID: <u>655</u> Site #: <u>1</u> (WBID_Site#) Estimated Channel Incision: <u>0.4</u> (m) (height between low bank width and water) GPS Location (taken at transect 1): UTM X: <u>0517457</u> UTM Y: <u>4469286</u> Horizontal Accuracy Estimate (GPS Data Quality): +/- <u>88</u> (feet)  Average Stream Width: <u>8.5</u> (meters) Length of Survey Segment: <u>190</u> (meters) (20x average stream width) Field Staff: <u>Nick Muenks</u> <u>Jarrod Roberts</u>	<div style="background-color: #d3d3d3; padding: 5px;"> <b>Dissolved Oxygen</b> </div> <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;">         Date: <u>5/17/07 am</u>  <u>5/21/07</u>          Dissolved Oxygen: <u>9.15</u> (mg/L)       </div> <div style="width: 45%;">         Time: <u>842</u>          Dissolved Oxygen: <u>95.7</u> (% sat)          Specific Cond: <u>523</u> (<math>\mu\text{s}/\text{cm}</math>)          Water Temperature: <u>17.9</u> (<math>^{\circ}\text{C}</math>)       </div> </div>
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## Transect Cross-Section

Measurement	01		02		03		04		05		06		07		08		09		10		11	
	Distance (m)	Depth (m)																				
1	0.20	0.12	0.00	0.11	0.00	0.17	0.20	0.12	0.20	0.11	0.20	0.10	0.00	0.13	1.00	0.11	0.40	0.12	0.70	0.10	0.00	0.12
2	1.15	0.20	1.25	0.30	1.00	0.78	1.25	0.59	1.38	0.10	1.30	0.17	0.21	0.17	1.60	0.12	0.90	0.15	1.75	0.15	0.48	0.36
3	2.10	0.25	2.50	0.20	2.00	0.79	2.30	0.66	2.56	0.16	2.40	0.13	0.42	0.19	2.20	0.16	1.40	0.17	2.80	0.15	0.96	0.33
4	3.05	0.30	3.75	0.31	3.00	0.70	3.35	0.60	3.74	0.14	3.50	0.10	0.63	0.19	2.80	0.20	1.90	0.20	3.85	0.10	1.44	0.29
5	4.00	0.44	5.00	0.38	4.00	0.62	4.40	0.58	4.92	0.10	4.60	0.10	0.84	0.20	3.40	0.24	2.40	0.47	4.90	0.10	1.92	0.30
6	4.95	0.68	6.25	0.45	5.00	0.53	5.45	0.50	6.10	0.10	5.70	0.10	1.05	0.19	4.00	0.25	2.90	0.55	5.95	0.00	2.40	0.30
7	5.90	0.72	7.50	0.50	6.00	0.48	6.50	0.40	7.28	0.00	6.80	0.10	1.26	0.18	4.60	0.10	3.40	0.58	7.00	0.00	2.88	0.26
8	6.85	0.66	8.75	0.52	7.00	0.38	7.55	0.33	8.46	0.00	7.90	0.10	1.47	0.16	5.20	0.10	3.90	0.57	8.05	0.00	3.36	0.21
9	7.80	0.59	10.00	0.57	8.00	0.31	8.60	0.30	7.64	0.32	9.00	0.10	1.68	0.15	5.80	0.11	4.40	0.53	9.10	0.10	3.84	0.20
10	8.75	0.58	11.25	0.54	9.00	0.16	9.65	0.20	10.82	0.10	10.10	0.10	1.89	0.12	6.40	0.14	4.90	0.55	10.15	0.13	4.32	0.13
11	9.70	0.11	12.50	0.11	10.00	0.10	10.70	0.12	12.00	0.11	11.20	0.11	2.10	0.10	7.00	0.10	5.40	0.12	11.20	0.26	4.80	0.13
12	9.80	0	12.70	0	11.30	0	11.30	0	14.20	0	11.40	0	7.70	0	7.20	0	5.50	0	11.30	0	5.10	0
Feature Type (rifflerun, or pool)	pool	26	pool	130	pool	60	pool	220	riffle	20	riffle	660	run/riffle	20	run	10	pool	10	riffle	30	run	

Notes: Transects will be measured beginning on left descending bank and finishing on right descending bank.

GPS location corresponds to Transect 01. Transects ordered in upstream to downstream order.

Transects in order of up to downstream.

Mark dry depth measurements as 0; measurements less than 0.1m as <0.1; and greater than 1m as >1

Measurement 1 depth = 0.1m (unless depth is insufficient); Measurement 11 depth = 0.1m (unless depth is insufficient); Measurement 12 distance = entire wetted width distance and depth = 0m.

Signed: Nick Muenks Date: 5/21/07  
GAK 5/25/07

WBID# 655  
Site# 2**Field Data Sheets for Recreational Use Stream Surveys****Data Sheet B - Site Characterization**  
(must be completed for each site)

Date & Time: <u>5/21/07 10:00</u>	Site Location Description (e.g., road crossing): <u>Hemlock Rd crossing</u>
Personnel (Data Collectors): <u>Nick Muecks Jerrod R.</u>	Facility Name: <u>Univerville County Club</u>
Current Weather Conditions: <u>Clear</u>	Permit Number: <u>MO 0026646</u>
Weather Conditions for Past 10 days:	
Drought Conditions?: No drought <input checked="" type="checkbox"/> ; Phase I <input type="checkbox"/> ; Phase II <input type="checkbox"/> ; Phase III <input type="checkbox"/> ; Phase IV <input type="checkbox"/> ; Unknown <input type="checkbox"/>	

**Site Locations:**

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)			
Site GPS Coordinates: UTM X: <u>0515752</u> Y: <u>4470125</u>			
HORIZONTAL COLLECTION METHOD (Indicate the method used to determine the locational data.)			
Global Positioning System (GPS)			
Static Mode	<input checked="" type="checkbox"/>	Interpolation	
Dynamic Mode (Kinematic)		Topographic Map or DRG	
Precise Positioning Service		Aerial Photograph or DOQQ	
Signal Averaging		Satellite Imagery	
Real Time Differential Processing		Interpolation Other	
HORIZONTAL ACCURACY ESTIMATE			
GPS Data Quality		Interpolation Data Quality	
FOM	± _____ Meters	Source Map Scale: 1:24,000 1:100,000 Other _____ ± _____ Feet or ± _____ Meters	
EPE	± <u>32.2</u> Feet or ± _____ Meters		
PDOP			

**Photos:**

Photo ID# (WBID_Site# ##)	Photo Purpose and Direction (upstream, downstream, other)	Photo ID# (WBID_Site# ##)	Photo Purpose and Direction (upstream, downstream, other)
655-2-760	Foot prints at site 2		
655-2-761	Downstream view from Transect 1		
655-2-762	Downstream view from Transect 1		
655-2-763	Upstream view from Transect 1		

**Uses Observed\*:** (Uses actually observed at time of survey.)

<input type="checkbox"/> Swimming	<input type="checkbox"/> Skin diving	<input type="checkbox"/> SCUBA diving	<input type="checkbox"/> Tubing	<input type="checkbox"/> Water skiing
<input type="checkbox"/> Wind surfing	<input type="checkbox"/> Kayaking	<input type="checkbox"/> Boating	<input type="checkbox"/> Wading	<input type="checkbox"/> Rafting
<input type="checkbox"/> Hunting	<input type="checkbox"/> Trapping	<input type="checkbox"/> Fishing	<input checked="" type="checkbox"/> None of the above	<input type="checkbox"/> Other:
Describe: (Include number of individuals recreating, photo-documentation of evidence of recreational uses, etc. Use Data Sheet D- Recreational Use Interview when conducting interviews.)				

**Surrounding Conditions\*:** (Mark all that promote or impede recreational uses. Attach photos of evidence or unusual items of interest.)

<input type="checkbox"/> City/county parks	<input type="checkbox"/> Playgrounds	<input type="checkbox"/> MDC conservation lands	<input type="checkbox"/> Urban areas	<input type="checkbox"/> Campgrounds
<input type="checkbox"/> Boating accesses	<input type="checkbox"/> State parks	<input type="checkbox"/> National forests	<input type="checkbox"/> Nature trails	<input type="checkbox"/> Stairs/walkway
<input checked="" type="checkbox"/> No trespass sign	<input type="checkbox"/> Fence	<input checked="" type="checkbox"/> Steep slopes	<input type="checkbox"/> None of the above	<input type="checkbox"/> Other:
Comments:				

WBID# 655  
Site# 2

## Field Data Sheets for Recreational Use Stream Surveys

### Data Sheet B - Site Characterization (must be completed for each site)

#### Indications of Human Use\*: (attach photos)

<input type="checkbox"/> Roads	<input type="checkbox"/> Rope swings	<input checked="" type="checkbox"/> Foot paths/prints	<input type="checkbox"/> Dock/platform	<input type="checkbox"/> Livestock Watering	<input type="checkbox"/> RV / ATV Tracks
<input type="checkbox"/> Camping Sites		<input type="checkbox"/> Fire pit/ring	<input type="checkbox"/> NPDES Discharge	<input type="checkbox"/> Fishing Tackle	<input type="checkbox"/> Other:
Comments:					

#### Stream Morphology:

Upstream View's Physical Descriptions: Is there any water present at this view?  Yes  No

If so, is there an obvious current?  Yes  No

#### Select one of the following channel features:

Channel Feature	Transect (#)	Distance from access (m)	Width (m)	Length (m)	Median Depth (m)	Max. Depth (m)
RIFFLE			20			
RUN			40			
POOL			40			

Downstream View's Physical Descriptions: Is there any water present at this view?  Yes  No

If so, is there an obvious current?  Yes  No

#### Select one of the following channel features:

Channel Feature	Distance from access (m)	Width (m)	Length (m)	Median Depth (m)	Max. Depth (m)
RIFFLE					
RUN					
POOL					

#### Substrate\*: (These values should add up to 100%.) *AAC*

<input type="radio"/> % Cobble	<input type="radio"/> % Gravel	<input checked="" type="radio"/> % Sand	<input type="radio"/> % Silt	<input type="radio"/> % Mud/Clay	<input type="radio"/> % Bedrock
		50	45	3	0

#### Aquatic Vegetation\*: (Note amount of vegetation or algal growth at the assessment site.)

*No vegetation or algae in wetted width, stream*

#### Water Characteristics\*: (Mark all that apply.)

ODOR:	<input type="checkbox"/> Sewage	<input type="checkbox"/> Musky	<input type="checkbox"/> Chemical	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Other:
COLOR:	<input checked="" type="checkbox"/> Clear	<input type="checkbox"/> Green	<input type="checkbox"/> Gray	<input type="checkbox"/> Milky	<input type="checkbox"/> Other:
BOTTOM DEPOSIT:	<input type="checkbox"/> Sludge	<input type="checkbox"/> Solids	<input type="checkbox"/> Fine sediments	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Other:
WATER SURFACE DEPOSITION:	<input type="checkbox"/> Oil	<input type="checkbox"/> Scum	<input type="checkbox"/> Foam	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Other:

#### Comments: Please attach any additional comments to this form.

\*This information is not to be used solely for removal of a recreational use designation but rather is to provide a more comprehensive understanding of water conditions. Consequently, this information is not intended to directly influence a decision on the recreation use analysis but may point to conditions that need further analysis or that affect another use.

Please verify that you have completed all sections, checked all applicable boxes and that everything is complete.

Surveyor's Signature: Nicole Meent Date of Survey: 5/21/07

Organization: MEL Water Resources Position: Water Quality Scientist

# MEC Recreational Use Attainability Analysis Field Survey Sheet

Waterbody ID: <u>655</u> Site #: <u>2</u> (WBID_Site#)	<b>Dissolved Oxygen</b> Date: <u>5/21/07</u> Time: <u>10:30</u>  Dissolved Oxygen: <u>8.65</u> (mg/L) Dissolved Oxygen: <u>93.9</u> (% sat) Specific Cond: <u>607</u> ( $\mu\text{S}/\text{cm}$ )  Water Temperature: <u>19.1</u> ( $^{\circ}\text{C}$ )
Estimated Channel Incision: <u>0.70</u> (m) (height between low bank width and water) GPS Location (taken at transect 1): UTM X: <u>0515752</u> UTM Y: <u>4470125</u> Horizontal Accuracy Estimate (GPS Data Quality): <u>+/- 32.2</u> (feet)	
Average Stream Width: <u>7</u> (meters) Length of Survey Segment: <u>150</u> (meters) Field Staff: <u>Nick Muenks</u> <u>Jerrod Roberts</u>	

## Transect Cross-Section

Measurement	01		02		03		04		05		06		07		08		09		10		11	
	Distance (m)	Depth (m)																				
1	0.70	0.10	1.60	0.10	0.50	0.10	0.30	0.12	0.90	0.10	0.10	0.10	1.20	0.28	0.70	0.11	0.50	0.10	0.30	0.12	0.00	0.10
2	1.23	0.10	1.85	0.10	1.28	0.10	0.70	0.12	1.45	0.17	0.92	0.11	1.95	0.51	1.33	0.32	1.00	0.12	0.91	0.18	0.68	0.35
3	1.76	0.10	2.10	0.12	2.06	0.10	1.10	0.14	2.00	0.16	1.74	<0.10	2.70	0.57	1.96	0.31	1.50	0.19	1.52	0.25	1.36	0.35
4	2.29	0.13	2.35	0.15	2.84	0.10	1.50	0.14	2.55	0.15	2.56	<0.10	4.65	0.72	2.59	0.23	2.00	0.23	2.13	0.26	2.04	0.34
5	2.82	0.13	2.60	0.19	3.62	0.10	1.90	0.13	3.10	0.13	3.38	<0.10	6.60	0.71	3.22	0.20	2.50	0.27	2.74	0.30	2.72	0.33
6	3.35	0.15	2.85	0.20	4.40	0.10	2.30	0.15	3.65	0.12	4.20	<0.10	8.55	0.70	3.85	0.20	3.00	0.29	3.35	0.30	3.40	0.28
7	3.88	0.10	3.10	0.21	5.18	<0.10	2.70	0.17	4.20	0.10	5.02	<0.10	10.50	0.74	4.48	0.18	3.50	0.32	3.96	0.30	4.08	0.25
8	4.41	<0.10	3.35	0.22	5.96	<0.10	3.10	0.17	4.75	0.11	5.84	<0.10	12.45	0.65	5.11	0.20	4.00	0.33	4.57	0.31	4.76	0.18
9	4.94	<0.10	3.60	0.25	6.74	<0.10	3.50	0.17	5.30	0.10	6.66	0.10	14.40	0.57	5.74	0.17	4.50	0.35	5.18	0.31	5.44	0.19
10	5.47	0.10	3.85	0.25	7.52	0.10	3.90	0.15	5.85	0.12	7.48	<0.10	16.35	0.50	6.37	0.19	5.00	0.35	5.79	0.29	6.12	0.17
11	6.00	0.12	4.10	0.19	8.30	0.10	4.30	0.10	6.40	0.20	8.30	0.10	18.30	0.11	7.00	0.12	5.50	0.14	6.40	0.28	6.80	0.11
12	6.80	0	4.30	0	8.60	0	6.00	0			8.50	0			8.00	0	5.70	0	6.50	0		
Feature Type (riffle, run, or pool)	80	riffle	20	run	30	run	170	run	100	run	20	riffle	pool	100	pool	20	pool	10	pool	pool		

Notes: Transects will be measured beginning on left descending bank and finishing on right descending bank.

GPS location corresponds to Transect 01. Transects ordered in upstream to downstream order.

Transects in order of up to downstream.

Mark dry depth measurements as 0; measurements less than 0.1m as <0.1; and greater than 1m as >1

Measurement 1 depth = 0.1m (unless depth is insufficient); Measurement 11 depth = 0.1m (unless depth is insufficient); Measurement 12 distance = entire wetted width distance and depth = 0m.

Signed: Nick Muenks

Date: 5/21/07

RNC 5-23-07

AK 5/25/07

WBID# 655  
Site# 3

## Field Data Sheets for Recreational Use Stream Surveys

### Data Sheet B - Site Characterization (must be completed for each site)

Date & Time: <u>5/21/07 1045</u>	Site Location Description (e.g., road crossing): <u>Olive &amp; Trail crossing</u>
Personnel (Data Collectors): <u>Nick M, Jerrod R.</u>	Facility Name: <u>Univille Country Club</u>
Current Weather Conditions: <u>Clear</u>	Permit Number: <u>MO 0026646</u>
Weather Conditions for Past 10 days:	
Drought Conditions?: No drought <input type="checkbox"/> ; Phase I <input type="checkbox"/> ; Phase II <input type="checkbox"/> ; Phase III <input type="checkbox"/> ; Phase IV <input type="checkbox"/> ; Unknown <input type="checkbox"/>	

#### Site Locations:

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)		
Site GPS Coordinates: UTM X: <u>0515285</u> Y: <u>4471818</u>		
HORIZONTAL COLLECTION METHOD (Indicate the method used to determine the locational data.)		
Global Positioning System (GPS)		
Static Mode	<input checked="" type="checkbox"/>	Interpolation
Dynamic Mode (Kinematic)	<input type="checkbox"/>	Topographic Map or DRG
Precise Positioning Service	<input type="checkbox"/>	Aerial Photograph or DOQQ
Signal Averaging	<input type="checkbox"/>	Satellite Imagery
Real Time Differential Processing	<input type="checkbox"/>	Interpolation Other
HORIZONTAL ACCURACY ESTIMATE		
GPS Data Quality		Interpolation Data Quality
FOM	± _____ Meters	Source Map Scale: 1:24,000 1:100,000 Other _____ ± _____ Feet or ± _____ Meters
EPE	± <u>16.2</u> Feet or ± _____ Meters	
PDOP		

#### Photos:

Photo ID# (WBID_Site# ##)	Photo Purpose and Direction (upstream, downstream, other)	Photo ID# (WBID_Site# ##)	Photo Purpose and Direction (upstream, downstream, other)
<u>655-3-764</u>	<u>Downstream view from T3</u>		
<u>655-3-765</u>	<u>Upstream view from T3</u>		

#### Uses Observed\*: (Uses actually observed at time of survey.)

<input type="checkbox"/> Swimming	<input type="checkbox"/> Skin diving	<input type="checkbox"/> SCUBA diving	<input type="checkbox"/> Tubing	<input type="checkbox"/> Water skiing
<input type="checkbox"/> Wind surfing	<input type="checkbox"/> Kayaking	<input type="checkbox"/> Boating	<input type="checkbox"/> Wading	<input type="checkbox"/> Rafting
<input type="checkbox"/> Hunting	<input type="checkbox"/> Trapping	<input type="checkbox"/> Fishing	<input checked="" type="checkbox"/> None of the above	<input type="checkbox"/> Other:

Describe: (Include number of individuals recreating, photo-documentation of evidence of recreational uses, etc. Use Data Sheet D- Recreational Use Interview when conducting interviews.)

#### Surrounding Conditions\*: (Mark all that promote or impede recreational uses. Attach photos of evidence or unusual items of interest.)

<input type="checkbox"/> City/county parks	<input type="checkbox"/> Playgrounds	<input type="checkbox"/> MDC conservation lands	<input type="checkbox"/> Urban areas	<input type="checkbox"/> Campgrounds
<input type="checkbox"/> Boating accesses	<input type="checkbox"/> State parks	<input type="checkbox"/> National forests	<input type="checkbox"/> Nature trails	<input type="checkbox"/> Stairs/walkway
<input checked="" type="checkbox"/> No trespass sign	<input type="checkbox"/> Fence	<input checked="" type="checkbox"/> Steep slopes	<input type="checkbox"/> None of the above	<input type="checkbox"/> Other:

Comments:

WBID# 655  
Site# 3**Field Data Sheets for Recreational Use Stream Surveys****Data Sheet B - Site Characterization**

(must be completed for each site)

**Indications of Human Use\*: (attach photos)**

<input type="checkbox"/> Roads	<input type="checkbox"/> Rope swings	<input type="checkbox"/> Foot paths/prints	<input type="checkbox"/> Dock/platform	<input type="checkbox"/> Livestock Watering	<input type="checkbox"/> RV / ATV Tracks
<input type="checkbox"/> Camping Sites		<input type="checkbox"/> Fire pit/ring	<input type="checkbox"/> NPDES Discharge	<input type="checkbox"/> Fishing Tackle	<input type="checkbox"/> Other:
Comments:   					

**Stream Morphology:****Upstream View's Physical Descriptions:** Is there any water present at this view?  Yes  NoIf so, is there an obvious current?  Yes  No**Select one of the following channel features:**

Channel Feature	Transect (#)	Distance from access (m)	Width (m) <i>% of site</i>	Length (m)	Median Depth (m)	Max. Depth (m)
RIFFLE			<i>30</i>			
RUN			<i>50</i>			
POOL			<i>20</i>			

**Downstream View's Physical Descriptions:** Is there any water present at this view?  Yes  NoIf so, is there an obvious current?  Yes  No**Select one of the following channel features:**

Channel Feature	Distance from access (m)	Width (m)	Length (m)	Median Depth (m)	Max. Depth (m)
RIFFLE					
RUN					
POOL					

**Substrate\*:** (These values should add up to 100%.)

<input checked="" type="checkbox"/> % Cobble	<input type="checkbox"/> % Gravel	<input type="checkbox"/> % Sand	<input type="checkbox"/> % Silt	<input type="checkbox"/> % Mud/Clay	<input type="checkbox"/> % Bedrock
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**Aquatic Vegetation\*:** (Note amount of vegetation or algal growth at the assessment site.)*few aquatic plants***Water Characteristics\*:** (Mark all that apply.)

ODOR:	<input type="checkbox"/> Sewage	<input type="checkbox"/> Musky	<input type="checkbox"/> Chemical	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Other:
COLOR:	<input checked="" type="checkbox"/> Clear	<input type="checkbox"/> Green	<input type="checkbox"/> Gray	<input type="checkbox"/> Milky	<input type="checkbox"/> Other:
BOTTOM DEPOSIT:	<input type="checkbox"/> Sludge	<input type="checkbox"/> Solids	<input checked="" type="checkbox"/> Fine sediments	<input type="checkbox"/> None	<input type="checkbox"/> Other:
WATER SURFACE DEPOSITION:	<input type="checkbox"/> Oil	<input type="checkbox"/> Scum	<input type="checkbox"/> Foam	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Other:

**Comments:** Please attach any additional comments to this form.

\*This information is not to be used solely for removal of a recreational use designation but rather is to provide a more comprehensive understanding of water conditions. Consequently, this information is not intended to directly influence a decision on the recreation use analysis but may point to conditions that need further analysis or that affect another use.

**Please verify that you have completed all sections, checked all applicable boxes and that everything is complete.**Surveyor's Signature: Nicole Date of Survey: 5/21/07Organization: MEC Water Resources Position: Water Quality Scientist

February 16, 2007

*BWC 5-23-07  
OK 5/25/07*

# MEC Recreational Use Attainability Analysis Field Survey Sheet

Waterbody ID: <u>655</u>	Site #: <u>3</u> (WBID_Site#)	Dissolved Oxygen
		Date: <u>5/21/07</u> Time: <u>1045</u>
Estimated Channel Incision: <u>0.35</u> (m) (height between low bank width and water)		Dissolved Oxygen: <u>9.84</u> (mg/L)
GPS Location (taken at transect 1): UTM X: <u>0515285</u> UTM Y: <u>4471818</u> → Transect 8 near bridge		Dissolved Oxygen: <u>107.6</u> (% sat)
Horizontal Accuracy Estimate (GPS Data Quality): <u>+/- 110.2</u> (feet)		Specific Cond: <u>622</u> (µS/cm)
Average Stream Width: <u>7</u> (meters) Length of Survey Segment: <u>150</u> (meters) (20x average stream width)		Water Temperature: <u>19.7</u> (°C)
Field Staff: <u>Nick Muenks</u> <u>Jennod Roberts</u>		

## Transect Cross-Section

Measurement	01		02		03		04		05		06		07		08		09		10		11	
	Distance (m)	Depth (m)																				
1	0.60	0.10	0.50	0.11	0.60	0.22	0.20	0.13	0.30	0.15	3.40	0.10	0.00	0.11	5.40	0.10	2.50	0.11	0.30	0.20	0.20	0.12
2	1.25	0.10	1.20	0.10	0.25	0.30	0.74	0.16	0.86	0.15	3.70	0.11	0.65	0.28	5.80	0.11	2.91	0.12	1.06	0.35	1.10	0.50
3	1.90	0.17	1.90	0.15	0.50	0.31	1.28	0.17	1.42	0.16	4.00	0.13	1.30	0.17	6.20	0.13	3.32	0.16	1.82	0.11	2.00	0.64
4	2.55	0.17	2.60	0.14	0.75	0.30	1.82	0.12	1.98	0.11	4.30	0.18	1.95	0.15	6.60	0.16	3.73	0.17	2.58	0.11	2.90	0.57
5	3.20	0.16	3.30	0.12	1.00	0.28	2.36	0.13	2.54	0.17	4.60	0.18	2.60	0.13	7.00	0.19	4.14	0.17	3.34	0.10	3.80	0.49
6	3.85	0.23	4.00	0.12	1.25	0.25	2.90	0.16	3.10	0.17	4.90	0.20	3.25	0.15	7.40	0.25	4.55	0.15	4.10	0.10	4.70	0.33
7	4.50	0.23	4.70	0.13	1.50	0.22	3.44	0.20	3.66	0.18	5.20	0.21	3.90	0.11	7.80	0.25	4.96	0.13	4.86	0.10	5.60	0.25
8	5.15	0.31	5.40	0.28	1.75	0.20	3.98	0.23	4.22	0.21	5.50	0.23	4.55	0.12	8.20	0.23	5.37	0.12	5.62	0.00	6.50	0.30
9	5.80	0.32	6.10	0.27	2.00	0.18	4.52	0.26	4.78	0.20	5.80	0.20	5.20	0.11	8.60	0.20	5.78	0.10	6.38	0.00	7.40	0.34
10	6.45	0.37	6.80	0.30	2.25	0.15	5.06	0.24	5.34	0.21	6.10	0.13	5.85	0.13	9.00	0.24	6.19	0.15	7.14	0.10	8.30	0.39
11	7.10	0.20	7.50	0.15	2.50	0.10	5.60	0.15	5.90	0.19	6.40	0.10	6.50	0.12	9.40	0.13	6.60	0.16	7.90	0.22	9.20	0.28
12	7.30	0	7.90	0	6.20	0	5.80	0	6.00	0			6.80	0			6.90	0			9.40	0
Feature Type (rifflerun, or pool)	pool	run	run/riffle	run	run	run	riffle/run	run	run	run	pool											

Notes: Transects will be measured beginning on left descending bank and finishing on right descending bank.

GPS location corresponds to Transect 01. Transects ordered in upstream to downstream order.

Transects in order of up to downstream.

Mark dry depth measurements as 0; measurements less than 0.1m as <0.1; and greater than 1m as >1

Measurement 1 depth = 0.1m (unless depth is insufficient); Measurement 11 depth = 0.1m (unless depth is insufficient); Measurement 12 distance = entire wetted width distance and depth = 0m.

Signed: Nick Muenks Date: 5/21/07  
 R.W.C. 5-23-07 AKL 5/25/07

WBID# 655  
Site# 4**Field Data Sheets for Recreational Use Stream Surveys****Data Sheet B - Site Characterization**  
(must be completed for each site)

Date & Time: <u>5/21/07 1145</u>	Site Location Description (e.g., road crossing): <u>Maywood Trl crossing</u>
Personnel (Data Collectors): <u>Nick M. Jerrard R.</u>	Facility Name: <u>Unionville Country Club</u>
Current Weather Conditions: <u>Clear</u>	Permit Number: <u>MO 0026646</u>
Weather Conditions for Past 10 days:	
Drought Conditions?: No drought <input type="checkbox"/> ; Phase I <input type="checkbox"/> ; Phase II <input type="checkbox"/> ; Phase III <input type="checkbox"/> ; Phase IV <input type="checkbox"/> ; Unknown <input type="checkbox"/>	

**Site Locations:**

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)		
Site GPS Coordinates: UTM X: <u>6510347</u> Y: <u>4473062</u>		
HORIZONTAL COLLECTION METHOD (Indicate the method used to determine the locational data.)		
Global Positioning System (GPS)		Interpolation
Static Mode	X	Topographic Map or DRG
Dynamic Mode (Kinematic)		Aerial Photograph or DOQQ
Precise Positioning Service		Satellite Imagery
Signal Averaging		Interpolation Other
Real Time Differential Processing		
HORIZONTAL ACCURACY ESTIMATE		
GPS Data Quality		Interpolation Data Quality
FOM	± _____ Meters	Source Map Scale: 1:24,000 1:100,000 Other _____ ± _____ Feet or ± _____ Meters
EPE	± <u>20.9</u> Feet or ± _____ Meters	
PDOP		

**Photos:**

Photo ID# (WBID_Site# #)	Photo Purpose and Direction (upstream, downstream, other)	Photo ID# (WBID_Site# #)	Photo Purpose and Direction (upstream, downstream, other)
655-4-766	Foot prints in stream at site 4	655-4-769	Downstream view from transect 11
655-4-767	Downstream view from transect 1	655-4-770	Upstream view from transect 11
655-4-768	Upstream view from transect 1		

**Uses Observed\*:** (Uses actually observed at time of survey.)

<input type="checkbox"/> Swimming	<input type="checkbox"/> Skin diving	<input type="checkbox"/> SCUBA diving	<input type="checkbox"/> Tubing	<input type="checkbox"/> Water skiing
<input type="checkbox"/> Wind surfing	<input type="checkbox"/> Kayaking	<input type="checkbox"/> Boating	<input type="checkbox"/> Wading	<input type="checkbox"/> Rafting
<input type="checkbox"/> Hunting	<input type="checkbox"/> Trapping	<input type="checkbox"/> Fishing	<input checked="" type="checkbox"/> None of the above	<input type="checkbox"/> Other:
Describe: (Include number of individuals recreating, photo-documentation of evidence of recreational uses, etc. Use Data Sheet D- Recreational Use Interview when conducting interviews.)				

**Surrounding Conditions\*:** (Mark all that promote or impede recreational uses. Attach photos of evidence or unusual items of interest.)

<input type="checkbox"/> City/county parks	<input type="checkbox"/> Playgrounds	<input type="checkbox"/> MDC conservation lands	<input type="checkbox"/> Urban areas	<input type="checkbox"/> Campgrounds
<input type="checkbox"/> Boating accesses	<input type="checkbox"/> State parks	<input type="checkbox"/> National forests	<input type="checkbox"/> Nature trails	<input type="checkbox"/> Stairs/walkway
<input checked="" type="checkbox"/> No trespass sign +	<input type="checkbox"/> Fence	<input checked="" type="checkbox"/> Steep slopes	<input type="checkbox"/> None of the above	<input type="checkbox"/> Other:
Comments: purple paint on fence posts				

WBID# 655  
Site# 4**Field Data Sheets for Recreational Use Stream Surveys****Data Sheet B - Site Characterization**  
(must be completed for each site)**Indications of Human Use\*:** (attach photos)

<input type="checkbox"/> Roads	<input type="checkbox"/> Rope swings	<input checked="" type="checkbox"/> Foot paths/prints	<input type="checkbox"/> Dock/platform	<input type="checkbox"/> Livestock Watering	<input type="checkbox"/> RV / ATV Tracks
<input type="checkbox"/> Camping Sites	<input type="checkbox"/> Fire pit/ring	<input type="checkbox"/> NPDES Discharge	<input type="checkbox"/> Fishing Tackle	<input type="checkbox"/> Other:	
Comments:   					

**Stream Morphology:****Upstream View's Physical Descriptions:** Is there any water present at this view?  Yes  NoIf so, is there an obvious current? *RWC*  Yes  No**Select one of the following channel features:**

Channel Feature	Transect (#)	Distance from access (m)	Width (m)	Length (m)	Median Depth (m)	Max. Depth (m)
RIFFLE			<i>1/2 of site</i>			
RUN			<i>60</i>			
POOL			<i>40</i>			

**Downstream View's Physical Descriptions:** Is there any water present at this view?  Yes  NoIf so, is there an obvious current?  Yes  No**Select one of the following channel features:**

Channel Feature	Distance from access (m)	Width (m)	Length (m)	Median Depth (m)	Max. Depth (m)
RIFFLE					
RUN					
POOL					

**Substrate\*:** (These values should add up to 100%).

<i>1</i>	% Cobble	<i>4</i>	% Gravel	<i>60</i>	% Sand	<i>20</i>	% Silt	<i>15</i>	% Mud/Clay	<i>0</i>	% Bedrock
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**Aquatic Vegetation\*:** (Note amount of vegetation or algal growth at the assessment site.)

<i>None observed</i>
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**Water Characteristics\*:** (Mark all that apply.)

ODOR:	<input type="checkbox"/> Sewage	<input type="checkbox"/> Musky	<input type="checkbox"/> Chemical	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Other:
COLOR:	<input checked="" type="checkbox"/> Clear	<input type="checkbox"/> Green	<input type="checkbox"/> Gray	<input type="checkbox"/> Milky	<input type="checkbox"/> Other:
BOTTOM DEPOSIT:	<input type="checkbox"/> Sludge	<input type="checkbox"/> Solids	<input checked="" type="checkbox"/> Fine sediments	<input type="checkbox"/> None	<input type="checkbox"/> Other:
WATER SURFACE DEPOSITION:	<input type="checkbox"/> Oil	<input type="checkbox"/> Scum	<input type="checkbox"/> Foam	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Other:

**Comments:** Please attach any additional comments to this form.

\*This information is not to be used solely for removal of a recreational use designation but rather is to provide a more comprehensive understanding of water conditions. Consequently, this information is not intended to directly influence a decision on the recreation use analysis but may point to conditions that need further analysis or that affect another use.

**Please verify that you have completed all sections, checked all applicable boxes and that everything is complete.**

Surveyor's Signature: Nick Muehl Date of Survey: 5/21/07  
 Organization: MEC Water Resources Position: Water Quality Scientist

February 16, 2007

*RWC 5-23-07*  
*AK 5/25/07*

# MEC Recreational Use Attainability Analysis Field Survey Sheet

Waterbody ID: <u>655</u>	Site #: <u>4</u> <small>(WBID_Site#)</small>		<b>Dissolved Oxygen</b> Date: <u>5/21/07</u> Time: <u>1145</u>  Dissolved Oxygen: <u>8.82</u> (mg/L)  Dissolved Oxygen: <u>104.2</u> (% sat)  Specific Cond: <u>687</u> ( $\mu\text{S}/\text{cm}$ )  Water Temperature: <u>23.5</u> ( $^{\circ}\text{C}$ )
Estimated Channel Incision: <u>0.50</u> (m) (height between low bank width and water) GPS Location (taken at transect 1): UTM X: <u>0510347</u> UTM Y: <u>4473062</u> Horizontal Accuracy Estimate (GPS Data Quality): <u>+/- 20.9</u> (feet)			
Average Stream Width: <u>10</u> (meters) Length of Survey Segment: <u>150</u> (meters) <small>(20x average stream width)</small> Field Staff: <u>Nick Muenks, Jerrad Roberts</u>			

## Transect Cross-Section

Measurement	01		02		03		04		05		06		07		08		09		10		11	
	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)
1	1.20	0.11	2.00	0.10	0.00	<0.10	0.50	0.10	2.50	0.10	0.00	0.18	0.60	0.11	0.50	0.10	0.00	0.11	0.20	0.15	2.40	0.10
2	1.45	0.12	2.23	0.11	0.80	<0.10	1.20	<0.10	2.65	0.16	0.46	0.15	0.98	0.12	0.81	0.11	0.40	0.19	0.45	0.18	2.70	<0.10
3	1.70	0.11	2.46	0.15	1.60	<0.10	1.90	<0.10	2.80	0.16	0.92	0.11	1.36	0.12	1.12	0.10	0.80	0.15	0.70	0.15	3.00	0.10
4	1.95	0.11	2.69	0.16	2.40	<0.10	2.60	<0.10	2.95	0.15	1.38	0.12	1.74	0.16	1.43	<0.10	1.20	0.16	0.95	0.14	3.30	0.11
5	2.20	<0.10	2.92	0.22	3.20	<0.10	3.30	0.00	3.10	0.18	1.84	0.13	2.12	0.13	1.74	0.10	1.60	0.15	1.20	0.13	3.60	0.11
6	2.45	<0.10	3.15	0.16	4.00	<0.10	4.00	0.00	3.25	0.15	2.30	<0.10	2.50	0.14	2.05	0.11	2.00	0.20	1.45	0.15	3.90	0.12
7	2.70	0.10	3.38	0.18	4.80	<0.10	4.70	0.11	3.40	0.16	2.76	0.10	2.88	0.14	2.36	0.17	2.40	0.10	1.70	0.13	4.20	0.14
8	2.95	0.12	3.61	0.20	5.60	<0.10	5.40	0.10	3.55	0.14	3.22	0.10	3.26	0.13	2.67	0.17	2.80	<0.10	1.95	0.13	4.50	0.19
9	3.20	0.12	3.84	0.17	6.40	<0.10	6.10	<0.10	3.70	0.12	3.68	0.10	3.64	0.20	2.98	0.15	3.20	0.10	2.20	0.12	4.80	0.13
10	3.45	0.13	4.07	0.17	7.20	<0.10	6.80	<0.10	3.85	0.11	4.14	<0.10	4.02	0.12	3.29	0.18	3.60	0.10	2.45	0.12	5.10	0.15
11	3.70	0.13	4.30	0.18	8.00	<0.10	7.50	0.10	4.00	0.10	4.60	0.11	4.40	0.14	3.60	0.14	4.00	0.11	2.70	0.10	5.40	0.10
12	4.20	0					8.00	0	5.20	0	4.90	0			3.80	0	6.10	0	2.90	0	5.80	0
Feature Type (riffle, run, or pool)	<sup>50°</sup> riffle	run	<sup>50°</sup> riffle	<sup>50°</sup> riffle	<sup>120°</sup> riffle	<sup>30°</sup> riffle	riffle	run	run	run	run/riffle	run	riffle									

Notes: Transects will be measured beginning on left descending bank and finishing on right descending bank.

GPS location corresponds to Transect 01. Transects ordered in upstream to downstream order.

Transects in order of up to downstream.

Mark dry depth measurements as 0; measurements less than 0.1m as <0.1; and greater than 1m as >1

Measurement 1 depth = 0.1m (unless depth is insufficient); Measurement 11 depth = 0.1m (unless depth is insufficient); Measurement 12 distance = entire wetted width distance and depth = 0m.

picks  
Down & up

Signed: Nick Muenks Date: 5/21/07  
 RNC 5-23-07  
DAK 5/26/07

WBID# 655  
Site# 5**Field Data Sheets for Recreational Use Stream Surveys****Data Sheet B - Site Characterization**  
(must be completed for each site)

Date & Time: <u>5/21/07 1325</u>	Site Location Description (e.g., road crossing): <u>Hwy 129 crossing</u>
Personnel (Data Collectors): <u>Nick M., Jerred R.</u>	Facility Name: <u>Unionville Country Club</u>
Current Weather Conditions: <u>Clear</u>	Permit Number: <u>MO 0026646</u>
Weather Conditions for Past 10 days:	
Drought Conditions?: No drought <input checked="" type="checkbox"/> ; Phase I <input type="checkbox"/> ; Phase II <input type="checkbox"/> ; Phase III <input type="checkbox"/> ; Phase IV <input type="checkbox"/> ; Unknown <input type="checkbox"/>	

**Site Locations:****LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)**Site GPS Coordinates: UTM X: 0507861 Y: 4473803**HORIZONTAL COLLECTION METHOD** (Indicate the method used to determine the locational data.)

Global Positioning System (GPS)		Interpolation
Static Mode	X	Topographic Map or DRG
Dynamic Mode (Kinematic)		Aerial Photograph or DOQQ
Precise Positioning Service		Satellite Imagery
Signal Averaging		Interpolation Other
Real Time Differential Processing		
<b>HORIZONTAL ACCURACY ESTIMATE</b>		
GPS Data Quality		Interpolation Data Quality
FOM	± _____ Meters	Source Map Scale: 1:24,000 1:100,000 Other _____ ± _____ Feet or ± _____ Meters
EPE	± <u>100</u> Feet or ± _____ Meters	
PDOP		

**Photos:**

Photo ID# (WBID_Site# ##)	Photo Purpose and Direction (upstream, downstream, other)	Photo ID# (WBID_Site# ##)	Photo Purpose and Direction (upstream, downstream, other)
<u>655-5-771</u>	<u>Downstream view from transect 5</u>		
<u>655-5-772</u>	<u>Upstream view from transect 5</u>		

**Uses Observed\*:** (Uses actually observed at time of survey.)

<input type="checkbox"/> Swimming	<input type="checkbox"/> Skin diving	<input type="checkbox"/> SCUBA diving	<input type="checkbox"/> Tubing	<input type="checkbox"/> Water skiing
<input type="checkbox"/> Wind surfing	<input type="checkbox"/> Kayaking	<input type="checkbox"/> Boating	<input type="checkbox"/> Wading	<input type="checkbox"/> Rafting
<input type="checkbox"/> Hunting	<input type="checkbox"/> Trapping	<input type="checkbox"/> Fishing	X None of the above	<input type="checkbox"/> Other:

Describe: (Include number of individuals recreating, photo-documentation of evidence of recreational uses, etc. Use *Data Sheet D- Recreational Use Interview* when conducting interviews.)**Surrounding Conditions\*:** (Mark all that promote or impede recreational uses. Attach photos of evidence or unusual items of interest.)

<input type="checkbox"/> City/county parks	<input type="checkbox"/> Playgrounds	<input type="checkbox"/> MDC conservation lands	<input type="checkbox"/> Urban areas	<input type="checkbox"/> Campgrounds
<input type="checkbox"/> Boating accesses	<input type="checkbox"/> State parks	<input type="checkbox"/> National forests	<input type="checkbox"/> Nature trails	<input type="checkbox"/> Stairs/walkway
<input checked="" type="checkbox"/> No trespass sign *	<input type="checkbox"/> Fence	X Steep slopes	<input type="checkbox"/> None of the above	<input type="checkbox"/> Other:

Comments: \*purple paint on fence, water gap was washed out

**Data Sheet B - Site Characterization**  
(must be completed for each site)**Indications of Human Use\*:** (attach photos)

<input type="checkbox"/> Roads	<input type="checkbox"/> Rope swings	<input type="checkbox"/> Foot paths/prints	<input type="checkbox"/> Dock/platform	<input type="checkbox"/> Livestock Watering	<input type="checkbox"/> RV / ATV Tracks
<input type="checkbox"/> Camping Sites		<input type="checkbox"/> Fire pit/ring	<input type="checkbox"/> NPDES Discharge	<input type="checkbox"/> Fishing Tackle	<input type="checkbox"/> Other:
Comments:   					

**Stream Morphology:**Upstream View's Physical Descriptions: Is there any water present at this view?  Yes  NoIf so, is there an obvious current? *anc*  Yes  No**Select one of the following channel features:**

Channel Feature	Transect (#)	Distance from access (m)	Width (m) <i>% of site</i>	Length (m)	Median Depth (m)	Max. Depth (m)
RIFFLE			<i>10</i>			
RUN			<i>25</i>			
POOL			<i>65</i>			

Downstream View's Physical Descriptions: Is there any water present at this view?  Yes  NoIf so, is there an obvious current?  Yes  No**Select one of the following channel features:**

Channel Feature	Distance from access (m)	Width (m)	Length (m)	Median Depth (m)	Max. Depth (m)
RIFFLE					
RUN					
POOL					

**Substrate\*:** (These values should add up to 100%.)

<i>1</i>	% Cobble	<i>9</i>	% Gravel	<i>70</i>	% Sand	<i>15</i>	% Silt	<i>5</i>	% Mud/Clay	<i>0</i>	% Bedrock
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**Aquatic Vegetation\*:** (Note amount of vegetation or algal growth at the assessment site.)

<i>None observed</i>
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**Water Characteristics\*:** (Mark all that apply.)

ODOR:	<input type="checkbox"/> Sewage	<input type="checkbox"/> Musky	<input type="checkbox"/> Chemical	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Other:
COLOR:	<input checked="" type="checkbox"/> Clear	<input type="checkbox"/> Green	<input type="checkbox"/> Gray	<input type="checkbox"/> Milky	<input type="checkbox"/> Other:
BOTTOM DEPOSIT:	<input type="checkbox"/> Sludge	<input type="checkbox"/> Solids	<input checked="" type="checkbox"/> Fine sediments	<input type="checkbox"/> None	<input type="checkbox"/> Other:
WATER SURFACE DEPOSITION:	<input type="checkbox"/> Oil	<input type="checkbox"/> Scum	<input type="checkbox"/> Foam	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Other:

**Comments:** Please attach any additional comments to this form.

\*This information is not to be used solely for removal of a recreational use designation but rather is to provide a more comprehensive understanding of water conditions. Consequently, this information is not intended to directly influence a decision on the recreation use analysis but may point to conditions that need further analysis or that affect another use.

Please verify that you have completed all sections, checked all applicable boxes and that everything is complete.

Surveyor's Signature: Nick Muench Date of Survey: 5/21/07

Organization: MEC Water Resources Position: Water Quality Scientist

# MEC Recreational Use Attainability Analysis Field Survey Sheet

Waterbody ID: <u>655</u>	Site #: <u>5</u> <small>(WBID_Site#)</small>	Estimated Channel Incision: <u>0.15</u> (m) (height between low bank width and water) GPS Location (taken at transect 1): UTM X: <u>0507861</u> UTM Y: <u>4473803</u> Horizontal Accuracy Estimate (GPS Data Quality): <u>+/- 100</u> (feet)	<b>Dissolved Oxygen</b> Date: <u>5/21/07</u> Time: <u>1325</u> Dissolved Oxygen: <u>9.83</u> (mg/L) Dissolved Oxygen: <u>117.6</u> (% sat) Specific Cond: <u>588</u> ( $\mu\text{S}/\text{cm}$ ) Water Temperature: <u>24.0</u> ( $^{\circ}\text{C}$ )
Average Stream Width: <u>4.5</u> (meters)		Length of Survey Segment: <u>150</u> (meters) <small>(20x average stream width)</small>	
Field Staff: <u>Nick Muenks</u> <u>Jerrod Roberts</u>			

## Transect Cross-Section

Measurement	01		02		03		04		05		06		07		08		09		10		11	
	Distance (m)	Depth (m)																				
1	1.10	0.13	0.30	0.11	0.00	0.14	0.20	0.11	1.00	0.11	1.30	0.11	1.10	0.10	0.00	0.12	0.00	>1.0	1.10	0.12	0.90	0.10
2	1.36	0.12	0.81	0.20	0.45	0.57	0.50	0.31	1.25	0.13	1.57	<0.10	1.31	<0.10	0.25	0.12	0.80	>1.0	1.50	0.16	1.34	0.24
3	1.62	0.11	1.32	0.25	0.90	0.59	0.80	0.38	1.50	0.16	1.84	<0.10	1.52	0.10	0.50	0.13	1.60	>1.0	1.90	0.16	1.78	0.34
4	1.88	0.13	1.83	0.27	1.35	0.54	1.10	0.37	1.75	0.17	2.11	0.10	1.73	<0.10	0.75	0.12	2.40	0.99	2.30	0.19	2.22	0.38
5	2.14	0.16	2.34	0.27	1.80	0.41	1.40	0.32	2.00	0.17	2.38	0.12	1.94	0.10	1.00	0.11	3.20	0.67	2.70	0.24	2.66	0.38
6	2.40	0.15	2.85	0.31	2.25	0.32	1.70	0.25	2.25	0.17	2.65	0.13	2.15	0.10	1.25	0.13	4.00	0.44	3.10	0.27	3.10	0.39
7	2.66	0.16	3.34	0.35	2.70	0.23	2.00	0.20	2.50	0.16	2.92	0.10	2.36	0.12	1.50	0.12	4.80	0.18	3.50	0.28	3.54	0.44
8	2.92	0.17	3.87	0.34	3.15	0.23	2.30	0.17	2.75	0.15	3.19	0.12	2.57	0.11	1.75	0.11	5.60	0.11	3.90	0.31	3.98	0.42
9	3.18	0.15	4.38	0.30	3.60	0.24	2.60	0.17	3.00	0.22	3.46	0.10	2.78	0.10	2.00	0.12	6.40	<0.10	4.30	0.12	4.42	0.23
10	3.44	0.14	4.89	0.25	4.05	0.25	2.90	0.13	3.25	0.21	3.73	0.14	2.99	0.10	2.25	0.12	7.20	0.10	4.70	<0.10	4.86	0.14
11	3.70	0.10	5.40	0.16	4.50	0.11	3.20	0.11	3.50	0.12	4.00	0.14	3.20	0.10	2.50	0.10	8.00	0.16	5.10	0.15	5.30	0.10
12	4.70	0		5.00	0	3.70	0	3.70	0			5.60	0	5.00	0			6.60	0	5.70	0	
Feature Type (riffle, run, or pool)	run	pool	pool	pool	run	run	run	riffle	run	pool	pool											

Notes: Transects will be measured beginning on left descending bank and finishing on right descending bank.

GPS location corresponds to Transect 01. Transects ordered in upstream to downstream order.

Transects in order of up to downstream.

Mark dry depth measurements as 0; measurements less than 0.1m as <0.1; and greater than 1m as >1

Measurement 1 depth = 0.1m (unless depth is insufficient); Measurement 11 depth = 0.1m (unless depth is insufficient); Measurement 12 distance = entire wetted width distance and depth = 0m.

Signed: Nick Muenks Date: 5/21/07  
 BWC 5-23-07 DAK 5/26/07

WBID# 655  
Site# 6**Field Data Sheets for Recreational Use Stream Surveys****Data Sheet B - Site Characterization**  
(must be completed for each site)

Date & Time: <u>5/1/07 1430</u>	Site Location Description (e.g., road crossing): <u>Fern Trl crossing</u>
Personnel (Data Collectors): <u>Nick M., Jerrod R.</u>	Facility Name: <u>Unionville Country Club</u>
Current Weather Conditions:	Permit Number: <u>MO 0026646</u>
Weather Conditions for Past 10 days:	
Drought Conditions?: No drought <input checked="" type="checkbox"/> ; Phase I <input type="checkbox"/> ; Phase II <input type="checkbox"/> ; Phase III <input type="checkbox"/> ; Phase IV <input type="checkbox"/> ; Unknown <input type="checkbox"/>	

**Site Locations:**

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)		
Site GPS Coordinates: UTM X: <u>0503677</u> Y: <u>4475317</u>		
HORIZONTAL COLLECTION METHOD (Indicate the method used to determine the locational data.)		
Global Positioning System (GPS)		
Static Mode	X	Interpolation
Dynamic Mode (Kinematic)		Topographic Map or DRG
Precise Positioning Service		Aerial Photograph or DOQQ
Signal Averaging		Satellite Imagery
Real Time Differential Processing		Interpolation Other
HORIZONTAL ACCURACY ESTIMATE		
GPS Data Quality		Interpolation Data Quality
FOM	± <u>1m</u> Meters	Source Map Scale: 1:24,000 1:100,000 Other _____ ± _____ Feet or ± _____ Meters
EPE	± <u>110</u> Feet or ± _____ Meters	
PDOP		

**Photos:**

Photo ID# (WBID Site# #)	Photo Purpose and Direction (upstream, downstream, other)	Photo ID# (WBID Site# #)	Photo Purpose and Direction (upstream, downstream, other)
655-6-773	Foot prints in stream	655-6-777	Downstream view transect 11
655-6-774	Downstream view transect 2	655-6-778	Upstream view transect 11
655-6-775	Downstream view transect 2		
655-6-776	Upstream view transect 2		

**Uses Observed\*:** (Uses actually observed at time of survey.)

<input type="checkbox"/> Swimming	<input type="checkbox"/> Skin diving	<input type="checkbox"/> SCUBA diving	<input type="checkbox"/> Tubing	<input type="checkbox"/> Water skiing
<input type="checkbox"/> Wind surfing	<input type="checkbox"/> Kayaking	<input type="checkbox"/> Boating	<input type="checkbox"/> Wading	<input type="checkbox"/> Rafting
<input type="checkbox"/> Hunting	<input type="checkbox"/> Trapping	<input type="checkbox"/> Fishing	X None of the above	<input type="checkbox"/> Other:

Describe: (Include number of individuals recreating, photo-documentation of evidence of recreational uses, etc. Use Data Sheet D- Recreational Use Interview when conducting interviews.)

**Surrounding Conditions\*:** (Mark all that promote or impede recreational uses. Attach photos of evidence or unusual items of interest.)

<input type="checkbox"/> City/county parks	<input type="checkbox"/> Playgrounds	<input type="checkbox"/> MDC conservation lands	<input type="checkbox"/> Urban areas	<input type="checkbox"/> Campgrounds
<input type="checkbox"/> Boating accesses	<input type="checkbox"/> State parks	<input type="checkbox"/> National forests	<input type="checkbox"/> Nature trails	<input type="checkbox"/> Stairs/walkway
X No trespass sign +	X Fence *	X Steep slopes	<input type="checkbox"/> None of the above	<input type="checkbox"/> Other:

Comments: \* along stream, no water gaps present

+ signs on fence near gates

WBID# 655  
Site# 6**Field Data Sheets for Recreational Use Stream Surveys****Data Sheet B - Site Characterization**  
(must be completed for each site)**Indications of Human Use\*:** (attach photos)

<input type="checkbox"/> Roads	<input type="checkbox"/> Rope swings	<input checked="" type="checkbox"/> Foot paths/prints	<input type="checkbox"/> Dock/platform	<input type="checkbox"/> Livestock Watering	<input type="checkbox"/> RV / ATV Tracks
<input type="checkbox"/> Camping Sites		<input type="checkbox"/> Fire pit/ring	<input type="checkbox"/> NPDES Discharge	<input type="checkbox"/> Fishing Tackle	<input type="checkbox"/> Other:
Comments:   					

**Stream Morphology:**Upstream View's Physical Descriptions: Is there any water present at this view?  Yes  NoIf so, is there an obvious current? *RWC*  Yes  No**Select one of the following channel features:**

Channel Feature	Transect (#)	Distance from access (m)	Width (m)	Length (m)	Median Depth (m)	Max. Depth (m)
RIFFLE			<i>90% of site</i>			
RUN			<i>40</i>			
POOL			<i>30</i>			

Downstream View's Physical Descriptions: Is there any water present at this view?  Yes  NoIf so, is there an obvious current?  Yes  No**Select one of the following channel features:**

Channel Feature	Distance from access (m)	Width (m)	Length (m)	Median Depth (m)	Max. Depth (m)
RIFFLE					
RUN					
POOL					

**Substrate\*:** (These values should add up to 100%).

<input type="radio"/> % Cobble	<input checked="" type="radio"/> % Gravel	<input type="radio"/> % Sand	<input type="radio"/> % Silt	<input type="radio"/> % Mud/Clay	<input type="radio"/> % Bedrock
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**Aquatic Vegetation\*:** (Note amount of vegetation or algal growth at the assessment site.)

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**Water Characteristics\*:** (Mark all that apply.)

ODOR:	<input type="checkbox"/> Sewage	<input type="checkbox"/> Musky	<input type="checkbox"/> Chemical	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Other:
COLOR:	<input checked="" type="checkbox"/> Clear	<input type="checkbox"/> Green	<input type="checkbox"/> Gray	<input type="checkbox"/> Milky	<input type="checkbox"/> Other:
BOTTOM DEPOSIT:	<input type="checkbox"/> Sludge	<input type="checkbox"/> Solids	<input checked="" type="checkbox"/> Fine sediments	<input type="checkbox"/> None	<input type="checkbox"/> Other:
WATER SURFACE DEPOSITION:	<input type="checkbox"/> Oil	<input type="checkbox"/> Scum	<input type="checkbox"/> Foam	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Other:

**Comments:** Please attach any additional comments to this form.

\*This information is not to be used solely for removal of a recreational use designation but rather is to provide a more comprehensive understanding of water conditions. Consequently, this information is not intended to directly influence a decision on the recreation use analysis but may point to conditions that need further analysis or that affect another use.

**Please verify that you have completed all sections, checked all applicable boxes and that everything is complete.**Surveyor's Signature: Nick Muenks Date of Survey: 5/21/07Organization: MEC Water Resources Position: Water Quality Scientist

February 16, 2007

*RWC 5-23-07  
NKE 5/25/07*

# MEC Recreational Use Attainability Analysis Field Survey Sheet

Waterbody ID: <u>655</u> Site #: <u>6</u> (WBID_Site#)	<b>Dissolved Oxygen</b> Date: <u>5/21/07</u> Time: <u>1430</u>  Dissolved Oxygen: <u>9.78</u> (mg/L)  Dissolved Oxygen: <u>120.6</u> (% sat)  Specific Cond: <u>597</u> ( $\mu\text{S}/\text{cm}$ )  Water Temperature: <u>25.9</u> ( $^{\circ}\text{C}$ )
Estimated Channel Incision: <u>0.30</u> (m) (height between low bank width and water) GPS Location (taken at transect 1): UTM X: <u>0503677</u> UTM Y: <u>4475317</u> Horizontal Accuracy Estimate (GPS Data Quality): <u>+/- 110</u> (feet)	
Average Stream Width: <u>5</u> (meters) Length of Survey Segment: <u>150</u> (meters) Field Staff: <u>Nick Muenks</u> <u>Jerrod Roberts</u> (20x average stream width)	

## Transect Cross-Section

Measurement	01		02		03		04		05		06		07		08		09		10		11	
	Distance (m)	Depth (m)																				
1	0.00	0.11	0.20	0.10	0.20	0.10	0.30	0.12	1.00	0.10	0.50	0.10	0.40	0.10	1.30	0.10	1.30	0.12	0.00	<0.10	0.00	<0.10
2	0.50	0.29	0.30	0.12	0.74	0.50	0.76	0.49	1.10	0.10	0.90	0.12	0.64	0.10	1.49	<0.10	1.45	0.11	0.50	<0.10	0.34	<0.10
3	1.00	0.43	0.40	0.14	1.28	0.55	1.22	0.49	1.20	0.11	1.30	<0.10	0.88	0.10	1.68	0.11	1.60	0.11	<0.10	<0.10	0.68	<0.10
4	1.50	0.52	0.50	0.13	1.82	0.58	1.68	0.45	1.30	0.11	1.70	<0.10	1.12	0.11	1.87	0.10	1.75	0.11	1.50	<0.10	1.02	<0.10
5	2.00	0.52	0.60	0.12	2.36	0.75	2.14	0.47	1.40	0.11	2.10	<0.10	1.36	<0.10	2.06	0.14	1.90	<0.10	2.00	<0.10	1.36	<0.10
6	2.50	0.50	0.70	0.11	2.90	0.65	2.60	0.53	1.50	0.12	2.50	<0.10	1.60	0.10	2.25	0.12	2.05	<0.10	2.50	<0.10	1.70	<0.10
7	3.00	0.53	0.80	0.12	3.44	0.57	3.06	0.50	1.60	0.14	2.90	<0.10	1.84	0.10	2.44	0.13	2.20	<0.10	3.00	<0.10	2.04	<0.10
8	3.50	0.48	0.90	0.12	3.98	0.40	3.52	0.43	1.70	0.15	3.30	0.10	2.08	0.10	2.63	0.11	2.35	<0.10	3.50	<0.10	2.38	<0.10
9	4.00	0.34	1.00	0.13	4.52	0.28	3.98	0.35	1.80	0.13	3.70	0.14	2.32	0.10	2.82	0.12	2.50	<0.10	4.00	0.00	2.72	<0.10
10	4.50	0.24	1.10	0.12	5.06	0.27	4.44	0.25	1.90	0.11	4.10	<0.10	2.56	0.11	3.01	0.11	2.65	<0.10	4.50	0.00	3.06	<0.10
11	5.00	0.12	1.20	0.10	5.60	0.13	4.90	0.13	2.00	0.11	4.50	0.10	2.80	0.12	3.20	0.12	2.80	0.11	5.00	<0.10	3.40	<0.10
12	5.10	0	1.40	0	5.90	0	5.20	0	3.00	0	5.20	0	3.60	0	3.60	0	4.10	0				
Feature Type (riffle, run, or pool)	pool	20°	run	30°	pool	30°	pool	100°	run	70°	riffle	80°	run	40°	run	130°	run	riffle	riffle	riffle	riffle	riffle

Notes: Transects will be measured beginning on left descending bank and finishing on right descending bank.

GPS location corresponds to Transect 01. Transects ordered in upstream to downstream order.

Transects in order of up to downstream.

Mark dry depth measurements as 0; measurements less than 0.1m as <0.1; and greater than 1m as >1

Measurement 1 depth = 0.1m (unless depth is insufficient); Measurement 11 depth = 0.1m (unless depth is insufficient); Measurement 12 distance = entire wetted width distance and depth = 0m.

Signed: Nick Muenks Date: 5/21/07  
 MWC 5-23-07  
 JAK 5/25/07

WBID# 655  
Site# 7**Field Data Sheets for Recreational Use Stream Surveys****Data Sheet B - Site Characterization**  
(must be completed for each site)

Date & Time: <u>5/21/07</u> <u>1620</u>	Site Location Description (e.g., road crossing): <u>Site within Mineral Hills CA</u>
Personnel (Data Collectors): <u>Nick M.</u> , <u>Jerrod R</u>	Facility Name: <u>Unincorporated Country Club</u>
Current Weather Conditions: <u>Clear</u>	Permit Number: <u>MO 0026646</u>
Weather Conditions for Past 10 days:	
Drought Conditions?: No drought <input checked="" type="checkbox"/> ; Phase I <input type="checkbox"/> ; Phase II <input type="checkbox"/> ; Phase III <input type="checkbox"/> ; Phase IV <input type="checkbox"/> ; Unknown <input type="checkbox"/>	

**Site Locations:**

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)	
Site GPS Coordinates: UTM X: <u>0504685</u>	Y: <u>4474096</u>
HORIZONTAL COLLECTION METHOD (Indicate the method used to determine the locational data.)	
Global Positioning System (GPS)	Interpolation
Static Mode	<input checked="" type="checkbox"/>
Dynamic Mode (Kinematic)	Topographic Map or DRG
Precise Positioning Service	Aerial Photograph or DOQQ
Signal Averaging	Satellite Imagery
Real Time Differential Processing	Interpolation Other
HORIZONTAL ACCURACY ESTIMATE	
GPS Data Quality	
FOM	± _____ Meters
EPE	± <u>26</u> . Feet or ± _____ Meters
PDOP	
Interpolation Data Quality	
Source Map Scale: 1:24,000 1:100,000 Other _____	
± _____ Feet or ± _____ Meters	

**Photos:**

Photo ID# (WBID_Site# ##)	Photo Purpose and Direction (upstream, downstream, other)	Photo ID# (WBID_Site# ##)	Photo Purpose and Direction (upstream, downstream, other)
<u>655-7-779</u>	<u>Downstream transect 7</u>	<u>655-7-782</u>	<u>Upstream view transect 8 down 7</u>
<u>655-7-780</u>	<u>Downstream transect 7</u>		
<u>655-7-781</u>	<u>Upstream view transect 7</u>		

**Uses Observed\*:** (Uses actually observed at time of survey.)

<input type="checkbox"/> Swimming	<input type="checkbox"/> Skin diving	<input type="checkbox"/> SCUBA diving	<input type="checkbox"/> Tubing	<input type="checkbox"/> Water skiing
<input type="checkbox"/> Wind surfing	<input type="checkbox"/> Kayaking	<input type="checkbox"/> Boating	<input type="checkbox"/> Wading	<input type="checkbox"/> Rafting
<input type="checkbox"/> Hunting	<input type="checkbox"/> Trapping	<input type="checkbox"/> Fishing	<input checked="" type="checkbox"/> None of the above	<input type="checkbox"/> Other:
Describe: (Include number of individuals recreating, photo-documentation of evidence of recreational uses, etc. Use Data Sheet D- Recreational Use Interview when conducting interviews.)				

**Surrounding Conditions\*:** (Mark all that promote or impede recreational uses. Attach photos of evidence or unusual items of interest.)

<input type="checkbox"/> City/county parks	<input type="checkbox"/> Playgrounds	<input checked="" type="checkbox"/> MDC conservation lands	<input type="checkbox"/> Urban areas	<input type="checkbox"/> Campgrounds
<input type="checkbox"/> Boating accesses	<input type="checkbox"/> State parks	<input type="checkbox"/> National forests	<input type="checkbox"/> Nature trails	<input type="checkbox"/> Stairs/walkway
<input type="checkbox"/> No trespass sign	<input type="checkbox"/> Fence	<input type="checkbox"/> Steep slopes	<input type="checkbox"/> None of the above	<input type="checkbox"/> Other:

Comments:

WBID# 655  
Site# 7**Field Data Sheets for Recreational Use Stream Surveys****Data Sheet B - Site Characterization**  
(must be completed for each site)**Indications of Human Use\*: (attach photos)**

<input type="checkbox"/> Roads	<input type="checkbox"/> Rope swings	<input type="checkbox"/> Foot paths/prints	<input type="checkbox"/> Dock/platform	<input type="checkbox"/> Livestock Watering	<input type="checkbox"/> RV / ATV Tracks
<input type="checkbox"/> Camping Sites	<input type="checkbox"/> Fire pit/ring		<input type="checkbox"/> NPDES Discharge	<input type="checkbox"/> Fishing Tackle	<input type="checkbox"/> Other:
Comments:   					

**Stream Morphology:****Upstream View's Physical Descriptions:** Is there any water present at this view?  Yes  NoIf so, is there an obvious current?  Yes  No**Select one of the following channel features:**

Channel Feature	Transect (#)	Distance from access (m)	Width (m) <i>RWC</i> <i>% on site</i>	Length (m)	Median Depth (m)	Max. Depth (m)
RIFFLE			10			
RUN			20			
POOL			70			

**Downstream View's Physical Descriptions:** Is there any water present at this view?  Yes  NoIf so, is there an obvious current?  Yes  No**Select one of the following channel features:**

Channel Feature	Distance from access (m)	Width (m)	Length (m)	Median Depth (m)	Max. Depth (m)
RIFFLE					
RUN					
POOL					

**Substrate\*:** (These values should add up to 100%.)

2 % Cobble	8 % Gravel	70 % Sand	15 % Silt	5 % Mud/Clay	0 % Bedrock
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**Aquatic Vegetation\*:** (Note amount of vegetation or algal growth at the assessment site.)*None observed***Water Characteristics\*:** (Mark all that apply.)

ODOR:	<input type="checkbox"/> Sewage	<input type="checkbox"/> Musky	<input type="checkbox"/> Chemical	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Other:
COLOR:	<input checked="" type="checkbox"/> Clear	<input type="checkbox"/> Green	<input type="checkbox"/> Gray	<input type="checkbox"/> Milky	<input type="checkbox"/> Other:
BOTTOM DEPOSIT:	<input type="checkbox"/> Sludge	<input type="checkbox"/> Solids	<input checked="" type="checkbox"/> Fine sediments	<input type="checkbox"/> None	<input type="checkbox"/> Other:
WATER SURFACE DEPOSITION:	<input type="checkbox"/> Oil	<input type="checkbox"/> Scum	<input type="checkbox"/> Foam	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Other:

**Comments:** Please attach any additional comments to this form.

\*This information is not to be used solely for removal of a recreational use designation but rather is to provide a more comprehensive understanding of water conditions. Consequently, this information is not intended to directly influence a decision on the recreation use analysis but may point to conditions that need further analysis or that affect another use.

**Please verify that you have completed all sections, checked all applicable boxes and that everything is complete.**Surveyor's Signature: Nick Muenk Date of Survey: 5/21/07Organization: MIC Water Resources Position: Water Quality Scientist

February 16, 2007

*RWC 5-23-07  
QJK 5/25/07*

# MEC Recreational Use Attainability Analysis Field Survey Sheet

Waterbody ID: <u>655</u>	Site #: <u>7</u> <small>(WBID_Site#)</small>	
Estimated Channel Incision: <u>2.36</u> (m) (height between low bank width and water)		<b>Dissolved Oxygen</b> Date: <u>5/21/07</u> Time: <u>16:20</u>
GPS Location (taken at transect 1): UTM X: <u>0504685</u> UTM Y: <u>4474096</u> Horizontal Accuracy Estimate (GPS Data Quality): <u>+/- 26.0</u> (feet)		Dissolved Oxygen: <u>7.55</u> (mg/L) Dissolved Oxygen: <u>88.9</u> (% sat) Specific Cond: <u>598</u> ( $\mu\text{S}/\text{cm}$ ) Water Temperature: <u>23.9</u> ( $^{\circ}\text{C}$ )
Average Stream Width: <u>5</u> (meters)	Length of Survey Segment: <u>150</u> (meters)	
Field Staff: <u>Nick Muenks</u> <u>Jerrrod Roberts</u>		

## Transect Cross-Section

Measurement	01		02		03		04		05		06		07		08		09		10		11	
	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)
1	0.50	0.11	0.60	0.11	0.50	0.10	0.60	<0.10	0.00	<0.10	0.00	0.11	0.00	0.10	0.00	0.39	0.00	0.15	0.30	0.20	0.30	0.12
2	0.73	0.12	0.85	0.16	0.85	0.12	0.37	<0.10	0.57	<0.10	0.58	0.35	0.22	0.18	0.28	0.32	0.74	0.30	1.22	0.40	1.05	0.12
3	0.96	0.14	1.10	0.17	1.20	0.14	0.74	<0.10	1.14	<0.10	0.96	0.20	0.44	0.28	0.56	0.29	1.48	0.15	2.14	0.38	1.80	0.10
4	1.19	0.16	1.35	0.15	1.55	0.10	1.10	<0.10	1.71	<0.10	1.34	0.13	0.66	0.20	0.84	0.25	2.22	0.10	3.06	0.30	2.55	0.16
5	1.42	0.18	1.60	0.17	1.90	0.15	1.48	<0.10	2.28	<0.10	1.72	0.16	0.88	0.15	1.12	0.23	2.96	0.10	3.98	0.25	3.30	0.25
6	1.65	0.19	1.85	0.18	2.25	0.12	1.85	<0.10	2.85	<0.10	2.10	0.13	1.10	0.13	1.40	0.22	3.70	<0.10	4.90	0.24	4.05	0.20
7	1.88	0.22	2.10	0.16	2.60	0.15	2.20	<0.10	3.42	<0.10	2.48	0.16	1.32	0.10	1.68	0.15	4.44	<0.10	5.82	0.31	4.80	0.22
8	2.11	0.22	2.35	0.14	2.95	0.10	2.59	<0.10	3.99	<0.10	2.86	0.14	1.54	0.10	1.96	0.17	5.18	0.00	6.74	0.31	5.55	0.24
9	2.34	0.18	2.60	0.13	3.30	0.16	2.96	<0.10	4.56	<0.10	3.24	0.12	1.76	0.15	2.24	0.10	5.92	0.11	7.66	0.35	6.30	0.30
10	2.57	0.15	2.85	0.12	3.65	0.14	3.33	<0.10	5.13	<0.10	3.62	0.13	1.98	0.20	2.52	0.11	6.66	0.14	8.58	0.39	7.05	0.38
11	2.80	0.13	3.10	0.11	4.00	0.11	3.70	<0.10	5.70	<0.10	4.00	0.11	2.20	0.14	2.80	0.12	7.40	0.12	9.50	0.11	7.80	0.37
12	3.10	0	3.50	0	4.40	0					5.00	0	2.60	0	5.50	0	7.70	0	9.70	0		
Feature Type (rifflerun, or pool)	<sup>30</sup> run	<sup>40</sup> run	<sup>40</sup> pool	riffle	riffle				<sup>100</sup> pool/run	<sup>40</sup> run					<sup>120</sup> pool	<sup>30</sup> pool	<sup>20</sup> pool					

Notes: Transects will be measured beginning on left descending bank and finishing on right descending bank.

GPS location corresponds to Transect 01. Transects ordered in upstream to downstream order.

Transects in order of up to downstream.

Mark dry depth measurements as 0; measurements less than 0.1m as <0.1; and greater than 1m as >1

Measurement 1 depth = 0.1m (unless depth is insufficient); Measurement 11 depth = 0.1m (unless depth is insufficient); Measurement 12 distance = entire wetted width distance and depth = 0m.

Signed: Nick Muenks

Date: 5/21/07

OwC 5-23-07

AKL 5/28/07

WBID# 0655



Site# 1 Photo ID# 655-1-757, Downstream



Site# 1 Photo ID# 655-1-758, Upstream



Site# 1 Photo ID# 655-1-759, Upstream



Site# 2 Photo ID# 655-2-760, Foot prints

WBID# 0655



Site# 2 Photo ID# 655-2-761, Downstream



Site# 2 Photo ID# 655-2-762, Downstream



Site# 2 Photo ID# 655-2-763, Upstream



Site# 3 Photo ID# 655-3-764 Downstream

WBID# 0655



Site# 3 Photo ID# 655-3-765, Upstream



Site# 4 Photo ID# 655-4-766, Foot prints



Site# 4 Photo ID# 655-4-767, Downstream



Site# 4 Photo ID# 655-4-768, Upstream

WBID# 0655



Site# 4 Photo ID# 655-4-769, Downstream



Site# 4 Photo ID# 655-4-770, Upstream



Site# 5 Photo ID# 655-5-771, Downstream



Site# 5 Photo ID# 655-5-772, Upstream

WBID# 0655



Site# 6 Photo ID# 655-6-773, Footprints



Site# 6 Photo ID# 655-6-774, Downstream



Site# 6 Photo ID# 655-6-775, Downstream



Site# 6 Photo ID# 655-6-776, Upstream

**WBID# 0655**



**Site# 6 Photo ID# 655-6-777, Downstream**



**Site# 6 Photo ID# 655-6-778, Upstream**



**Site# 7 Photo ID# 655-7-779, Downstream**



**Site# 7 Photo ID# 655-7-781, Upstream**

**WBID# 0655**



**Site# 7 Photo ID# 655-7-782, Upstream**